Lesson 52 - Chemicals In Our Air

- 1. Introduction
- 2. The Deadly Chemicals In Our Air
- 3. Clean Air: How Can We Get It?
- 4. Questions & Answers
- Article #1: The Breath of Life By Dr. Herbert M. Shelton

1. Introduction

The monument had stood in the Egyptian sands for over 35 centuries. "Cleopatra's Needle" it was called, and it had thousands of beautiful carvings and drawings all upon it. Somehow the ancient monument had survived the raging desert sands and hot Egyptian sun for over three thousand years.

In 1880 the monument was transferred to downtown New York. A hundred years later, the monument had eroded away so that all the drawings upon it had completely disappeared. What the sandstorms of Egypt for 3500 years could not do had been accomplished by the polluted air of New York City. The ancient drawings had been eaten away by the sulfur oxides in the dirty city air.

The chemicals in the air today are equally destructive of human health and life, and with every breath you take, you are taking in chemical compounds that never even existed a few years ago.

Air pollution and the chemicals we are forced to breathe should be an area of great concern to the health seeker. Much more important than the food we eat is the air we breathe. After all, you only eat about three times a day. You breathe about fifteen times every minute. Clean, pure air is one of the primary requisites for superior health. This lesson discusses the chemicals that are now in our air supply, and what we can do about them.

1.1 The Sea of Air

A philosopher once said, "The fish shall be the last to discover water." He meant that it is often hard to see clearly what is often taken for granted. Humans take the air they breathe for granted, and we always assume that each morning we can wake up and take a nice, deep breath of life-giving air. Some day that might not be the case.

Almost all life on earth is supported by a layer of air less than two miles thick. Without this protective layer of air, the earth would reach a daily high temperature of 230 degrees, and drop to an overnight low of 300 degrees below zero.

Right now, we have about six thousand billion tons of air on this planet. We won't run out of air, but we may run out of *breathable* air in the near future. Almost all of our air is either nitrogen (78%) or oxygen (21%). A gas called argon makes up 95% of the remaining atmosphere, and carbon dioxide takes up another 3% of the remaining air. Less than two-hundreths of a percent of our atmosphere contains other gases, such as helium, neon, methane, ammonia, hydrogen sulfide, and carbon monoxide.

Yet in that small percentage of other gases lies the pollution problem. Only a very small amount of dangerous gases and chemicals need to be present in the atmosphere to affect all of us greatly.

1.2 Nature's Balance

Naturally occurring air is never completely clean. There has always been foreign matter in the atmosphere in the form of volcanic ash, pollen, spores, salt particles from the ocean, and even cosmic dust from the upper atmosphere. These particles actually serve a useful function in the play of nature by acting as a stimulus for rain and precipitation.

The foreign particles fall to earth with the rain and the air is cleaned. Meanwhile, plants are busy recycling carbon dioxide into oxygen, and the giant oceans are recirculating and cleaning the air all over the planet.

But then the balance was upset. With the coal-burning industries of the nineteenth century, abnormally large amounts of foreign particles and gases escaped into the air. The rain could no longer clear the air completely, and the oceans became polluted. The oxygen-producing forests and fields were leveled and made into concrete sites for buildings.

More garbage was being dumped into the air than nature could handle. Finally, the whole atmosphere all over the globe became contaminated, dirty, and unhealthy.

1.3 What Is Air Pollution?

Air pollution is defined as substances or radiations in the atmosphere which harm living organisms or their environment. Normally, as we have seen, the atmosphere is self-purifying. However, when a high concentration of unnatural wastes is discharged into the air, then the atmosphere becomes overburdened and polluted.

Eventually the pollutants in the air may be precipitated from the atmosphere when it rains. When this occurs, the pollution falls onto the land or water, and contaminates this part of our environment.

1.4 What Causes Air Pollution?

Air pollution is caused in one of three ways: surface friction, vaporization, and combustion.

Friction is a minor cause of air pollutants. Such things as sawing, drilling, and grinding various materials release airborne particles which may find their way into your lungs eventually. For most people, friction is not a major source of pollution unless they are workers in a mine, mill, or other industry that releases small particles into the air.

Vaporization occurs when a liquid becomes a gas. A good example is paint thinner. When the can is opened, certain fumes escape as vapor into the atmosphere. Gasoline also undergoes vaporization, as do paints, glues, and other chemical compounds. This is only a major source of pollution when a nearby industry is engaged in making these products, or is working with rubber or plastic which can also vaporize.

Combustion is the real villain as the cause of air pollutants. Combustion is simply the burning of a solid or liquid into a gas. For instance, your car works on combustion by turning gasoline into various hot gases.

When combustion occurs, heat and light are usually released. Unfortunately, other chemicals and gases are also released into the atmosphere. Some of these chemicals are harmful, and are the major factors in polluting our air.

In fact, a quick study of the air pollution problem is really just a description of these chemicals and how they get into our atmosphere.

2. The Deadly Chemicals In Our Air

Many of the pollutants in our atmosphere have unfamiliar and scientific names, yet they are not difficult to understand. Each major chemical pollutant is discussed below as to the possible harm it can do us, where it comes from and how we can prevent it from becoming more widespread.

Here's a list of the more common chemicals that pollute your air: sulfur dioxide, carbon monoxide, nitrogen oxides, hydrocarbons, ozone, lead, and asbestos.

2.1 Sulfur Dioxide: The Gas From Hell

"If smells like hell around here," a worker complained to his boss. What he was talking about was the choking, sulfur fumes that came from the worker's plant. Sulfur dioxide does indeed remind you of the "fire and brimstone" odor. If you breathed a deep lungful of the gas, it would feel like thousands of razor blades in your lungs.

Sulfur dioxide is one of the deadliest air pollutants, and it accounts for about 18% of all air pollution. Sulfur dioxide I has been implicated in cases of asthmatic attacks, eczema (a skin disease), breathing difficulties, and paralysis and corrosion of the respiratory organs.

As soon as sulfur dioxide rises to a concentration of only one-five *millionth* of the atmosphere, deaths increase rapidly.

Coal-burning plants and industries account for almost 85% of all sulfur dioxide pollution. Residential use of coal and fuel oil makes up another 10% of the sulfur dioxide release. The problem of sulfur dioxide pollution is the most serious in areas of the northeast where coal burning is the most widespread.

No one, however, can escape the harmful effects of sulfur dioxide because it is spread all over the earth in "acid rain." Acid rain occurs when the particles of sulfur dioxide are carried through the air and combine with water particles and fall to earth. Along with the water in the rain, you also get the acid waste products of sulfur dioxide.

Crops that are especially susceptible to sulfur dioxide and acid rain are wheat, barley, oats, cotton, alfalfa, buckwheat, and white pine. In fact, within a twenty-mile radius of a plant that emits sulfur dioxide in Tennessee, over 90% of all the white pine trees have been killed.

These sulfur compounds also enter the streams, rivers, and lakes after they fall from the air. As a result, many fish and aquatic plants quickly die.

As an individual, you can help control this type of air pollution by using another form of heating besides coal and fuel oil. If you must use these fuels to heat your home, insist that you receive a *low-sulfur* content coal or fuel. By simply converting to a lower sulfur content of coal, the problem could be greatly eased. At the same time, you should push for stronger regulations about the amount of sulfur dioxide industries can release into our air.

2.2 Carbon Monoxide: A Totally Manmade Gas

A jellyfish can belch carbon monoxide. Other than that, man is the only creature that can create this deadly gas. Carbon monoxide is the killer behind automobile gas poisonings that occur in closed garages. This gas in the exhaust fumes of cars is often fatal to unsuspecting drivers.

Over one-half of the total air pollution in this country comes from carbon monoxide. And you are responsible, because 80% of all carbon monoxide comes from the exhaust pipe of the automobile.

Carbon monoxide is extremely dangerous. It is almost certain that you have been poisoned by this gas at least once in the past week if you drive in heavy traffic. Tests have shown that traffic jams can produce

enough carbon monoxide from the idling cars to cause headaches, irritability, dizziness, and nausea.

People who must work near heavy traffic areas often breathe in enough carbon monoxide so that their mental processes are slowed down to about one-half what they should be in clean air. Many driving accidents are now thought to be caused by carbon monoxide leaking from the car and poisoning the driver in the car.

For some people, driving a car isn't enough pollution. They must also smoke cigarettes, which also give off carbon monoxide. Heavy smokers may have as much as 5°?o of their blood hemoglobin permanently combined with carbon monoxide. When this occurs, the tissues suffer a low level of oxygen starvation and destruction. Even the carbon monoxide from a single cigarette in a closed car can create headaches in all the passengers.

Every gallon of gasoline that you burn in your car releases three pounds of carbon monoxide into the atmosphere. The solution to this sort of pollution is simple: restrict and limit all driving and strive for a more fuel-efficient car.

During the days of the Vietnam war protests when hundreds burned their draft cards, science-fiction writer, Ray Bradbury, said: "The students who are burning their draft cards are fighting the wrong enemy. This war will eventually end, but the more serious and deadly war, the one against air pollution, will never be won until we end our dependence on the polluting automobile. If these protestors want to perform a really radical and earth-saving act, they should be burning their *drivers' licenses* instead of their draft cards."

2.3 Nitrogen Oxides: The Smog Triggers

The sun in the midday sky was only a watery disk. Cars drove slowly with their lights on. It was noon in Los Angeles, but the smog made the city look like a smoky, evening battleground. Nitrogen oxides had combined with other gases from the heavy traffic to form a dense layer of smog that blocked the sunlight.

Nitric oxide and nitrogen dioxide are the two most damaging of the nitrogen pollutants. Nitric oxide is very similar to carbon monoxide, and reduces the oxygen carrying capability of the blood. Nitrogen dioxide irritates the eyes, nose, bronchial tubes, and lungs. High concentrations of this toxic gas prove fatal.

Gasoline motor vehicles are the major source of nitrogen oxide pollutants. Coal and natural gas burning account for the second largest class of nitrogen oxide polluters.

Again, the most effective way to control this form of air pollution is by reducing dependency on the gasoline engine, and finding safer energy alternatives than coal burning.

2.4 Hydrocarbons: The Urban Air Pollution

Hydrocarbons are often emitted in the exhaust from automobiles and from industrial smoke stacks. The major cause of hydrocarbon pollution is the processing and use of petroleum products. Consequently, hydrocarbon pollution is highest in urban areas.

About 13% of the entire annual output of air pollutants is in the form of hydrocarbons. Most of the hydrocarbon compounds are carcinogenic—that is", they "contribute to the causes of cancer.

One of the major hydrocarbon pollutants is *benzopyrene*. This toxic gas is also found in cigarette smoke, and is suspected as a cancer catalyst. Worldwide studies have proven that benzopyrene specifically produces lung cancer. Many city residents breathe in about as much of this gas daily as is contained in seven cigarettes.

Some cities are much worse. For example, the benzopyrene level in New York City and Birmingham, Alabama, is such that the average resident takes in as much of this poisonous gas as is contained in the

equivalent of about fifty cigarettes daily! Studies have also shown that the person who both smokes cigarettes and lives in polluted urban air is the most likely to have cancer.

2.5 Ozone: From Out of the Blue

Ozone is a clear, blue gas that exists naturally in the far upper regions of our atmosphere. Man, however, has increased the ozone content at the lower levels by emitting large amounts of nitrogen dioxide pollutants which in turn cause the creation of additional ozone.

At low levels, ozone poisoning results in chest pain, coughing, and eye irritation. Continuous exposure to small amounts of ozone has shortened the lives of laboratory animals. Ozone destroys such crops as grapes, spinach, lettuce, and alfalfa. It even attacks textile and rubber, causing them to deteriorate.

Ozone poisoning may also be a problem with those that work around electrical equipment and apparatus. Ozone has a sharp, almost "clean" type of smell. It may also be found in various air fresheners and sprays.

2.6 Better No Lead Than Dead

Chances are good that you are suffering from a low level of lead poisoning, particularly if you live near areas where automobile exhaust is a problem.

Lead affects the central nervous system. Headaches, dizziness, insomnia, weakness, anemia, and loss of appetite are some of the symptoms of chronic lead poisoning. The greatest danger of lead pollution is that it changes the shape of healthy red blood cells and makes them brittle. Residential areas where lead fallout is high also have a correspondingly high incidence of heart failure and disease.

Lead is a cumulative poison. That means it can build up in your system over a number of years. Lead is in both the air and water supply. Over urban areas, there is twice as much lead in the rainfall as is set by the government for drinking water standards.

Most of the lead, however, is not in the water but in the air. Airborne lead is caused chiefly by burning gasoline that contains lead. About two-thirds of all lead in gasoline is exhausted into the atmosphere.

In fact, since the introduction of lead-containing gasoline in 1924, the average person now carries around in his body *100 times* as much lead as did people who lived before 1924.

Our cars that use lead gasoline have made the atmosphere over *1,000 times higher* in lead content than it would have naturally. The annual lead fallout over this country is over 500,000 tons a year. Eventually, these large amounts will upset the mineral balance of the oceans and produce massive lead poisonings.

The solution? Immediate suspension of sales of all leaded gasoline. The lead in the gasoline our automobiles burn is the major cause of the lead problem. If you want to help, always use unleaded gasoline in your car. It's worth the extra effort for the sake of the environment and your health.

2.7 Asbestos: Fibers In Your Lungs

Asbestos is found in pipe and electric insulations, brake linings, and, unfortunately, the human lungs.

Asbestos fibers pollute our air and often find their way into sensitive lung tissue where they become embedded. The mechanical irritation of these fibers harms the lungs and are believed to contribute to tumors in the lungs.

Asbestos is also often found in many building materials, all the way from the roofing of a house down to the floor tiles, and in the insulation in between.

Construction workers, electricians, plumbers, and many industrial workers need to be concerned about the asbestos pollution in their working environment.

Homemakers are not immune to the asbestos problem either. Even such a harmless-looking product as talcum powder has now been discovered to contain asbestos fibers. When this powder is used, asbestos particles enter the air and lungs, as well as being deposited on the skin.

2.8 Air You Can See: Particle Pollution

Although not purely chemicals, another form of air pollution is solid particles. You've seen this type of air pollution yourself. In a ray of sunlight, you've probably seen tiny moving particles of "dust." Such dust contains spores, pollen, molds, ash, soil, soot, and dozens of other solid compounds.

In a large city, every breath you take has about 70,000 solid particles in it. Even "clean" country air has about 40,000 solid particles in each breath of air.

Generally, these airborne particles of pollution remain in the air for only a few days. Occasionally, however, the lighter particles may drift for weeks and hundreds of miles from where they were released.

These particles come from everywhere: from fires, from industries, from farming, and from cars. In Los Angeles alone, one survey estimated that 50 tons of rubber particles from spinning tires are released into the air every day!

These airborne particles can make the sky hazy and shut out needed sunlight. For example, after volcanic eruptions which release a large amount of solid particles, the temperature often drops for a period of weeks. Solid particles in our air also cause irritation to the lungs and eyes, and produce what are often mistakenly labeled as "allergies."

If temperature inversions occur or the wind blows the wrong way, these particles can gather in one part of an area and actually darken the daytime sky. When such conditions occur, deaths due to pollution rise by as much as 50%.

3. Clean Air: How Can We Get It?

One of the primary requisites for a healthy and long life is clean and pure air. Unfortunately, this is one area that we sometimes have little control over. We can always choose the food we want to eat and decide when to exercise or fast, but the air we have to breathe is what is given us.

This does not mean, however, that we are helpless in obtaining pure air. Here are some practical suggestions that will help you live in a cleaner environment:

1. Demand strict enforcement of all existing air pollution laws. Push for stronger standards and increased funding for air-quality control organizations.
2. Reduce your fuel consumption and automobile dependency. *Use unleaded gas*. Drive less, and have your car checked to see if it is emitting high levels of pollutants.
3. Allow no smoking in your personal environment, and work for antismoking ordinances in public places and business areas.
4. Try to live in a low-urban environment. Have your home away from heavily traveled roads and highways. Make sure that home gardens are at least 100 feet from any street. The further you live from traffic congestion, the healthier you will be.
5. If you live where the air quality is low, take trips and vacations to where the air is clean and your lungs can have a chance to detoxify.
6. Follow a nontoxic diet as suggested by Life Science. This will allow your body to better cope

with the effects of pollution.

7. Exercise away from heavy traffic areas. Do not run alongside cars while jogging, and save all heavy exercising for as unpolluted an area as available to you.
8. Purchase products which produce little pollutants in their manufacture. Some of the worse pollutants are plastic industries and petroleum companies. Try to restrict the use of all such products.
9. Start to re-green your city and area. Plants and forests are our first line of defense against air pollution. You can help by setting out trees in your yard and city. Actively work to preserve all existing "green" areas in towns and cities.
10. Watch the fuel you burn for heating. Low-sulfur coal fuel oil can slow pollution down. Have your home furnace or heating system checked for maximum efficiency so that fewer byproducts are produced in the heating of your home.

Fighting air pollution is not hopeless. Already the quality of the air has somewhat improved since the early 1970s. However, our air has not become so much better than we can grow lax. Industries are continually petitioning for relaxed air standards, and it is up to the public to see that the antipollution laws are instead strengthened and enforced.

Every day of your life, you draw in 20,000 breaths. You have the right to expect that not a single one of these breaths should endanger your health. The air and atmosphere are our common heritage and resource, and we must insure that they stay clean for us and our children.

4. Questions & Answers

I'd like to know more about air filters and cleaners that I can use in my home. Specifically, what about negative ion generators? Are they good in cleaning up the air, and are there any worthwhile machines to filter out cigarette smoke?

> Air cleaning machines and ion generators do not solve the air pollution problem. The chemicals are still in the air that we breathe even after being filtered through these machines. Air-cleaning devices, however, have been effective in eliminating particles of dust, pollen, and smoke from the home and business.
>
> Before buying or using one of these air-cleaning machines, you should first investigate very carefully how they work. Some of these devices may have harmful chemicals in the filtering mechanism they use, so make sure that you are not creating another problem when you use such machines.
>
> Negative ion generators are very popular and are widely advertised. The verdict is still out on these machines, but caution is urged. All negative ion generators emit ozone as well as negative ions. Make sure that any ion generator you might buy has a very low level of ozone emission. Many people also report a difficulty in sleeping when one of these generators is in the bedroom. Evidently the negative ions have a stimulating effect on the organism, and this may prevent a deep sleep or rest.\
>
> If you must work in a smokey or dust-filled environment, however, an air-filtering device or ion generator might be more beneficial than harmful and should be carefully investigated.

I want to move where there isn't any air pollution. Where should I go?

> I would suggest the moon. There is no air there, nor any pollution at this point. Seriously, there is now no place on earth that does not have an air-pollution problem. Air pollutants have been found in the Antarctic air where there are no cars nor industries. There are definitely worse places to live than others, however. If you live in the nation's top twenty urban areas, you'll be worse off than many of your country cousins. It's not just urban density, however, that determines the quality of your air. You also have to consider the terrain and weather conditions. Some cities produce an awful lot of pollution, but the prevailing winds simply blow the poisons downwind to another town or state. Generally, however, you would do well to avoid cities that have heavy industries, like petroleum, plastic, or chemical plants. Coal-burning areas are always worse than locales that do not use coal as a major fuel source.
>
> You cannot, however, run away from air pollution. It will follow you no matter where you live. The ultimate solution to air pollution is not to remove yourself from it, but to remove the pollution from the air. It is an uphill fight, but it can be won if you make your voice heard.

Article #1: The Breath of Life by Dr. Herbert M. Shelton

Man is a child of nature. He is an outdoor animal. Normally he lives amid the beauties of nature, his skin bathed in the morning dew, kissed by the sun, soothed by the gentle zephyrs of Spring and his body fed by the luscious fruits and vegetables all around him, while his spirit is cheered by the songs of birds and the beauty and fragrance of myriads of gorgeously colored flowers. The open air is his home and he who lives in it is fortunate indeed.

Like fish on the floor of the ocean, we live in a sea of air that is much deeper than the hydrosphere in which aquatic animals live. There is always an abundance of much needed oxygen, if we but permit it access to our lungs. The air is self-purifying, so that, while impurities are ceaselessly being discharged into it, these soon find their way to other levels and leave the air fit to breathe. Pent-up air, that is, air that is confined in closed rooms, and air that is held in congested and gas-laden cities quickly becomes unfit for breathing. Such air, if breathed habitually, helps to produce disease; whereas, pure is one of the basic essentials of good health. This is often denied, but we shall continue to insist that pure air is absolutely essential to excellence of health and to the highest beauty and that, on the contrary, impure air tends to the production of poor health and the deterioration of beauty.

Modern city life, with more than sixty-five percent of our population residing in the cities, denies fresh air to the people as certainly as did the closed windows and doors of the houses of our grandparents. It is not that there is no air in the cities, but that it is so badly polluted with smoke, fumes, dust, etc., that it is actually unfit to breathe. The carbon monoxide from the exhaust of automobiles is but one of the air-polluters of modern life. Nitric and sulphuric acids, lead oxides and lead carbonates are among the contaminating elements found in the air of cities. The soot of soft coal is often one-half coal tar and this must help to produce lung cancer as surely as do the tars of tobacco smoke. The particles of carbon (soot) in smoke-filled air accumulate in the lungs and become imbedded in the air cells, gradually changing the lungs from their normal pink to one of sooty blackness. Indeed, this coating of carbon becomes so thick that one wonders how the individual breathes at all. As we become more and more a

manufacturing nation and chemistry continues to pollute the air of the cities, they will grow progressively more and more unfit for human beings to inhabit. There are urgent reasons, other than atom and hydrogen bombs, why we should inaugurate an immediate program of decentralization designed to ultimately do away with all cities.

The body's need for oxygen is constant, hence it is not possible to stop breathing for more than a very brief time. It is impossible to hold the breath for more than a minute or so. If the breath is forcibly cut off for a longer period than this death, death from lack of oxygen quickly occurs. It is estimated that approximately eighty-five percent of the oxygen we need is derived from the air we breathe, ten percent from water and five percent is taken in from the air through the skin. Dr. Tilden held that we get some oxygen from the foods we eat, perhaps from the water in these. There are reasons to doubt that we breathe with the skin. I question that we extract oxygen from water.

Other than an adequate supply of fresh air, the essential of good breathing is an adequate respiratory mechanism; sound lungs, a chest of sufficient size to house lungs large enough to deliver sufficient oxygen to the blood, normal chest movements in breathing and normal passages from the nose to the lungs. If the chest is too small it is not only out of harmony with the rest of the body, hence ugly, but it fails to meet the functional needs of the organism. If we begin early enough and persist in our efforts the chest may be developed in almost everybody to the required size.

The motility of the chest is often only slight, due in most instances, to a lack of use. The motility of the chest may be determined by measuring its expansion. In measuring chest expansion it is common to place the tape just beneath the arms. A truer measure of chest expansion may be obtained by applying the tape over the lower ribs, just beneath the breasts. The chest should be fully contracted and then expanded to its limit. The difference between the two measurements thus obtained gives us the chest expansion. This does not always measure chest capacity, as much of this depends upon the action of the diaphragm.

Air does not require to be forced into the lungs; it has to be forced out. When the chest expands, a vacuum is created and the air automatically flows into this. Normally the activities of the chest in breathing—inspiration and expiration—are automatically adjusted to the needs of the body; these activities increasing when more oxygen is needed or there is more carbon dioxide to expel, and decreasing when there is decreased need for oxygen or decreased production of carbon dioxide. Many things do, however, lower the functioning power of the respiratory system and cause use to function on a lower physiological level.

Impaired respiratory function reduces the amount of oxygen that is taken into the blood and that is carried to the tissues (anoxia) and the amount of oxygen in the blood (anoxemia). Some of the inhibiting factors are external and are supplied by the individual himself; others are internal and are commonly of the individual's own making. Let us briefly consider these in order.

Cramped positions of sitting and standing that prevent the normal excursions of the chest and diaphragm, tight belts, corsets, foundation garments and other articles of apparel, that constrict of the chest and abdomen and prevent normal chest and diaphragmatic movements, hamper the intake of sufficient oxygen to meet the needs of the organism. Under such conditions, the body is forced to reduce its other functions to a level commensurate with the support provided by the respiratory system. Instead of vigorous function, feeble function is our lot.

Nasal obstructions (adenoids, nasal polyps, thickened nasal membranes, catarrh, bent or broken septum, traumatic and congenital distortion of the nose, small nasal passages, etc.), spasm of the bronchi (as in asthma) tumors that block the respiratory passages, pleurisy, adhesions, tuberculosis of the lungs, water in the lungs, as in advanced heart disease, pneumonia, a cold, smallness and deformities of the chest limit the amount of air that may be taken in at each respiration and the amount of carbon dioxide that can be expelled at each expiration.

Free nasal passages are not only essential to the ingress of adequate oxygen, but also to the normal

conditioning of the inspired air for its entrance into the lungs. The air must be warmed or cooled, moistened or dried, as the case may be, in its passage from the outside to the lungs. If the nasal membrane is swollen and congested, for example, it will not only hinder the intake of air, but it will fail to properly condition the air. Dust and dirt must be filtered from the air, as it passes into the air passages and down to the lungs. This fails if the nose is not normal. Thus it becomes apparent that a well-formed, efficiently functioning and fully healthy nose is as necessary to good breathing as a well-developed chest and sound lungs. If the respiratory mechanism is normal, if the air is pure, if there are no external and positional interferences with the mechanism of breathing, this function will be automatically and subconsciously adjusted to the varying needs of the body for oxygen, so that conscious attention to the process is unnecessary.